

Material Safety Data Sheet

Terminal Deoxynucleotidyl Transferase

ACC# 92145

Section 1 - Chemical Product and Company Identification

MSDS Name: Terminal Deoxynucleotidyl Transferase

Catalog Numbers: BP32035, BP32035S

Synonyms: None Known.

Company Identification:

Fisher Scientific

1 Reagent Lane

Fair Lawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
9027-67-2	Nucleotidyltransferase, terminal deoxyribo-	50.0	232-819-6
75-60-5	Cacodylic acid	5.0-10.0	200-883-4
56-81-5	Glycerol	Balance	200-289-5

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless liquid.

Caution! May cause eye, skin, and respiratory tract irritation. May be harmful if swallowed. Cancer suspect agent.

Target Organs: No data found.

Potential Health Effects

Eye: May cause eye irritation.

Skin: May cause skin irritation. May be absorbed through the skin in harmful amounts.

Ingestion: May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated. May be harmful if swallowed.

Inhalation: May cause respiratory tract irritation. May be harmful if inhaled.

Chronic: May cause liver and kidney damage. Effects may be delayed. Repeated exposure to Cacodylic Acid can cause a metallic or garlic taste poor appetite, nausea and vomiting, difficulty swallowing, stomach pain, diarrhea, and seizures. High or repeated exposure may damage the nerves causing weakness, "pins and needles," and poor coordination in the arms and legs. IARC states that there is sufficient evidence for carcinogenicity for this group of chemicals, arsenic, in humans, and only limited evidence in experimental animals (HSDB, 1996).

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Never give anything by mouth to an unconscious person. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water. Wash mouth out with water.

Inhalation: Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Cool containers with flooding quantities of water until well after fire is out. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: Not available.

Autoignition Temperature: Not available.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 2; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Wash hands before eating. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Use with adequate ventilation.

Storage: Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Nucleotidyltransferase, terminal deoxyribo-	none listed	none listed	none listed
Cacodylic acid	0.01 mg/m ³ TWA (listed under Arsenic).	5 mg/m ³ IDLH (listed under Arsenic).	0.5 mg/m ³ TWA (listed under Arsenic).
Glycerol	10 mg/m ³ TWA	none listed	15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)

OSHA Vacated PELs: Nucleotidyltransferase, terminal deoxyribo-: No OSHA Vacated PELs are listed for this chemical. Cacodylic acid: No OSHA Vacated PELs are listed for this chemical. Glycerol: 10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate gloves to prevent skin exposure.

Clothing: Wear appropriate clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: colorless

Odor: Not available.

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: 100 deg C

Freezing/Melting Point: Not available.

Decomposition Temperature: Not available.

Solubility: Not available.

Specific Gravity/Density: Not available.

Molecular Formula: Solution

Molecular Weight: Not available.

Section 10 - Stability and Reactivity

Chemical Stability: Material is heat sensitive and may decompose at elevated temperatures.

Conditions to Avoid: Incompatible materials, excess heat, exposure to moist air or water.

Incompatibilities with Other Materials: Oxidizing agents, lead oxide, nitric acid, sulfuric acid, hydrogen peroxides, potassium permanganate, calcium hypochlorite, perchloric acid, moisture.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, oxides of arsenic.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 9027-67-2 unlisted.

CAS# 75-60-5: CH7525000

CAS# 56-81-5: MA8050000

LD50/LC50:

Not available.

CAS# 75-60-5:

Oral, mouse: LD50 = 1200 mg/kg;
Oral, rat: LD50 = 644 mg/kg;

CAS# 56-81-5:

Draize test, rabbit, eye: 126 mg Mild;
Draize test, rabbit, eye: 500 mg/24H Mild;
Draize test, rabbit, skin: 500 mg/24H Mild;
Inhalation, rat: LC50 = >570 mg/m3/1H;
Oral, mouse: LD50 = 4090 mg/kg;
Oral, rabbit: LD50 = 27 gm/kg;
Oral, rat: LD50 = 12600 mg/kg;
Skin, rabbit: LD50 = >10 gm/kg;

Carcinogenicity:

CAS# 9027-67-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 75-60-5:

- **ACGIH:** A1 - Confirmed Human Carcinogen (listed as 'Arsenic').
- **California:** carcinogen, initial date 5/1/96
- **NTP:** Not listed.
- **IARC:** Group 1 carcinogen (listed as Arsenic).

CAS# 56-81-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found

Teratogenicity: No information found

Reproductive Effects: Adverse reproductive effects have occurred in experimental animals.

Mutagenicity: Mutagenic effects have occurred in experimental animals. Mutagenic effects have occurred in humans.

Neurotoxicity: No information found

Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series:

CAS# 75-60-5: waste number U136.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	CARBON DIOXIDE, SOLID USED FOR DIAGNOSTIC OR TREATMENT PURPOSE	No information available.
Hazard Class:	9	
UN Number:		
Packing Group:	III	

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 9027-67-2 is listed on the TSCA inventory.

CAS# 75-60-5 is listed on the TSCA inventory.

CAS# 56-81-5 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 75-60-5: 1 lb final RQ; 0.454 kg final RQ

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 75-60-5: immediate, delayed.

CAS # 56-81-5: delayed.

Section 313

This material contains Cacodylic acid (listed as Arsenic), 5.0-10.0%, (CAS# 75-60-5) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA. CAS# 75-60-5 is listed as a Priority Pollutant under the Clean Water Act. CAS# 75-60-5 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 9027-67-2 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 75-60-5 can be found on the following state right to know lists: California, (listed as Arsenic), California, (listed as Arsenic compounds, n.o.s.), New Jersey, Pennsylvania, Minnesota, (listed as Arsenic), Massachusetts.

CAS# 56-81-5 can be found on the following state right to know lists: Pennsylvania, Minnesota, Massachusetts.

California Prop 65

WARNING: This product contains Cacodylic acid, a chemical known to the state of California to cause cancer.

California No Significant Risk Level: CAS# 75-60-5: 0.06 æg/day NSRL (inhalation); 10 æg/day NSRL (except inhalation) (listed under Arsenic)

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

XN

Risk Phrases:

R 20/22 Harmful by inhalation and if swallowed.

R 49 May cause cancer by inhalation.

Safety Phrases:

S 20/21 When using do not eat, drink or smoke.

S 28 After contact with skin, wash immediately with...

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 53 Avoid exposure - obtain special instructions before use.

S 60 This material and its container must be disposed of as hazardous waste.

WGK (Water Danger/Protection)

CAS# 9027-67-2: No information available.

CAS# 75-60-5: 3

CAS# 56-81-5: 0

Canada - DSL/NDSL

CAS# 56-81-5 is listed on Canada's DSL List.

CAS# 75-60-5 is listed on Canada's NDSL List.

Canada - WHMIS

This product has a WHMIS classification of D2A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 75-60-5 (listed as Arsenic) is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 11/21/2001

Revision #2 Date: 10/05/2004

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.